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THE KIRTLAND-STORER CORRESPONDENCE ON OHIO FISHES (1838-45) AND A KIRTLAND-BAIRD COLLECTION OF OHIO FISHES (1853)

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Abstract

Excerpts from 22 letters that Dr. Jared Potter Kirtland sent to Dr. David Humphreys Storer (1838-45) have been selected to illustrate the problems Kirtland faced in developing studies on the fishes of Ohio, and his growth from a beginner to the leading authority on the fish fauna of Ohio.

Also, a list of 45 species of fishes collected by Dr. Kirtland and Spencer Fullerton Baird in August of 1853 from Yellow Creek and the Mahoning River is given with a list of 16 species reported to them from the area, but not collected by them. Current names as recognized by Trautman (1957) are added.

Introduction

Between 1838 and 1845, Dr. Jared Potter Kirtland, the first important naturalist in northeastern Ohio, wrote 22 letters concerning his study of Ohio fishes to Dr. D. Humphreys Storer of the Boston Society of Natural History. These have been edited to show Dr. Kirtland's problems in

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Fig. 1. Dr. Jared Potter Kirtland (1793-1877), first authority on the fishes of northern Ohio. Photo from a painting in The Cleveland Museum of Natural History.

studying the fish fauna in an unexplored area and with very limited available literature to guide him. They also show Kirtland's growth from a beginner in the field to the leading authority on Ohio fishes, through the aid of Dr. Storer.

Dr. Kirtland (1793-1877), born and reared in Connecticut, joined his father, the founder of Poland, Ohio, in 1810 to teach school and study the natural history of the area. After his medical education at Yale University and a brief period of medical practice in Connecticut, he returned to Poland (a suburb of Youngstown) in 1823 to practice medicine and to continue his studies of natural history. In 1836-37 he was in charge of zoology for the first Geological Survey of Ohio. In his *Report on the Zoology of Ohio* (1838) he described many new fishes. Also in 1837, he bought a farm at East Rockport (now Lakewood) which he developed into an experimental farm for horticulture and bee-keeping, as well as headquarters for his extensive field studies and medical practice. He also taught part-time at several medical schools (Cleveland, Willoughby, Cincinnati). During his scientific career he published 79 reports on Ohio fishes, which are listed in Trautman's classic monograph on *The Fishes of Ohio* (Trautman 1957: 628-630). Included is a series of papers on the fishes of the Ohio River, Lake Erie, and their tributaries published in the *Proceedings of the Boston Society of Natural History* and the *Boston Journal of Natural History*. Kirtland also republished these articles in his newspaper, "The Family Visitor," issued simultaneously in Cleveland and Hudson. This weekly paper maintained a regular column for natural history. Kirtland was a founder of and leader in the Cleveland Academy of Natural Sciences, which later became the Kirtland Society of Natural History, the prototype of the Cleveland Museum of Natural History.

Dr. Storer (1804-91), a native of Maine, was graduated from the Harvard Medical School in 1825 and practiced medicine in Boston until 1888. He was one of the founders of the Tremont Street Medical School which later merged with the medical department at Harvard. He served as both professor and dean at the Harvard Medical School. In 1837 he was placed in charge of zoology and herpetology for the Massachusetts Geological Survey, and he was a founder of the Boston Society of Natural History. Among his major publications on fishes are the *Report on the Ichthyology and Herpetology of Massachusetts* (1839), *Synopsis of the Fishes of North America* (1846a), and *History of the Fishes of Massachusetts* (1853-57). Also, he summarized Kirtland's work on the fishes of Ohio for the Boston Society of Natural History (1846b).



D. Humphreys Storer

Fig. 2. Dr. David Humphreys Storer (1804-1891), who aided Kirtland in his studies on Ohio fishes. Photo from an engraving, courtesy of Museum of Science, Boston.

The Kirtland-Storer Correspondence
on Ohio Fishes (1838-45)

On 13 July 1838, Dr. Kirtland, writing from Poland in Trumbull County, sent his first letter to Dr. Storer by way of introduction and a request for assistance.

"In organizing the Geological Board for the Survey of this State, the Botanical and Zoological departments are committed to my charge. I expected to visit your city during the present season with a portion of my collection of Fishes, Reptiles, and Insects for the purpose of soliciting aid in arranging them from yourself and Dr. [T. W.] Harris, and your brother [Hon. B. Storer] at Cincinnati had the goodness to favor me with the enclosed letter of introduction, but our Legislature having failed to make an appropriation for carrying on the Survey, I am compelled to relinquish my contemplated journey. The Survey will probably be discontinued, but I am determined to pursue the subject of ichthyology till I become familiar with all that our state affords in that branch of Natural Science. I have devoted most of the present season to the collecting of specimens from Lake Erie or from the tributaries of the Ohio and would now take the liberty of communicating with you for the purpose of reducing the result of my labors to some order. In all businesses there must be a beginning; it will be unnecessary for me to add that the following is my first effort at attempting to reduce our fishes to a scientific arrangement.

"Isolated as I am in the interior of a newly settled country without the aid of suitable books, the knowledge of what has been done by others or even the aid of any one who takes the least interest in the subject, every step that I take leads into new doubts and perplexities. No other apology I trust will be required for my abrupt intrusion on your attention."

The letter was accompanied by a list of 52 species of fishes, some with tentative identification, and with notes and questions concerning his doubts about identity. Undoubtedly many errors needed to be corrected. His letter continued:

"Will you favor me by correcting any errors in the above list by supplying if possible names where they are omitted and by adding any species of Ohio fish that I have not included. . . .

"Enclosed is a ten dollar bill. I wish to become a subscriber to your Translation of Keiner [work on shells]."

Five weeks later, having received no word from Dr. Storer, and realizing the mails were not always dependable, he wrote again.

"As our mails are an unsafe source for transmitting money, even in small sums, and I have neither received any numbers of your Translation nor an answer to my long communication on the subject of Our Western Fishes, I conclude the letter must have failed to reach its proper place of destination. . . . I shall leave home to resume my labors in the Ohio Medical College at Cincinnati on the 20th of October and it is highly important to me, to obtain both your Translation of Keiner and all the information in regard to our Fishes that I possibly can, previous to my departure.

"Since my former letter I have incidentally learned that you have published a *Report of the Fishes of Massachusetts*. Is it a form in which you could furnish me with a copy through the Post Office? I have lately been comparing Rafinesque's publication *On the Fishes of the Ohio River* with the fishes themselves. I find that he has described most of the species that actually exist as well as a great number that are only imaginary. He has rather thrown darkness than light over the subject."

Rafinesque has been severely criticized by many naturalists through the years, usually with justification, but David Starr Jordan came to his defense in regard to at least one publication on fishes by Rafinesque, writing, "descriptions are much better than he has been given credit for" (Dexter 1956).

After receiving two letters and the second installment of Storer's Translation of Keiner's book on shells, Kirtland wrote back to Storer on 28 September 1838.

"A few days before the arrival of your last letter I unexpectedly received Rafinesque's publication on the *Fishes of the Ohio River* contained in a series of numbers in the *Western Review* which I suppose contains the substance of his publication to which you alluded. By means of his descriptions and your explanations I have been able to arrange our fishes in a far more satisfactory manner than I anticipated. To do Rafinesque justice I must say that he knew far more about the fish than he did the shells of the Western Waters. His descriptions are not very plain and clear, but with close examination will be found to be more accurate than first view of them would lead one to suppose. He certainly must have expended much time and labor in his investigations of our fish. In a number of instances he has made species out of varieties. My catalogue now contains 64 species, one or two of them are doubtful.

"It is probable that I shall continue to examine all of our fish till I get familiar with them. Should it be thought advisable to undertake a new arrangement of them, I shall have no objection to commence the [work]

next season as I shall resign my station in the Geological Board not choosing to be at the mercy of every political fluctuation.

"Would the Society [Boston Society of Natural History] be willing to publish full and accurate *Descriptions of the Fishes of Ohio* with plates if I should furnish them in series from time to time?"

Over the ensuing eight years Kirtland published a series of papers on his studies of Ohio fishes in the publications of the Boston Society of Natural History (Kirtland 1839-46). Not all of the illustrations submitted, however, were published with the text. A collection of 57 Kirtland's original drawings, including some that were not published, were brought to light by Moulton (1957). Also, Kirtland complained to Storer that "Lake Erie" had been left out of the title in the early issues. Of the eight installments, "Lake Erie" was included in the title only three times.

Kirtland continued his periodic reports to Storer on 1 October 1838.

"I have been busily engaged for several days in describing and figuring five new species of our Western Fishes and had completed them last evening except making corrections. I had also written you a long letter which was in the same unfinished state. This morning I very accidentally met with a gentleman, a passenger in the stage, on his way to your city who had the goodness to take charge of my letter, drawings, and manuscript and says that he will deliver them to you in the course of three weeks. I had no alternative except to either [take] his offer and send them uncorrected or to lose a chance that might not again occur in many months. I therefore concluded it was most advisable to send them and tax you with the trouble of making any verbal corrections or supplying any omissions that are evident in the descriptions before they are published. In the main they are correct. The drawings are the result of my first serious attempt with the pencil. Connoisseurs will, without doubt, discover many awkward points in them, but I believe they will serve to illustrate the species sufficiently for Naturalists. They are at least as well executed as Rafinesque in the *Journal of the Academy of Natural Sciences of Philadelphia*.

"I shall leave home on the 15 inst. [of month] to resume my duties in the Medical College at Cincinnati and of course shall not have much leisure to continue the investigation of our Fishes during the winter. Still, every market morning I intend to visit the fish stalls before sunrise and shall without doubt occasionally find something interesting.

"In arranging our Percoides I hesitated whether to place together those species described by Lesueur as *Cickla aenea*, *fasciata*, *minima* and *ohioensis* and to add to the same genus my new species or to place the

aenea of *Storeria* under Curvier's genus *Centrachus*. On repeated examination I can find no good reason for separating them except the two latter have slight dentations or serrations on the angle of the preoperculum and I have at length concluded to place them together under the genus *Cickla* of Schneider. They differ from it in having scaly opercula, his character is 'operculi smooth.'

"If you think I am incorrect in this, will you have the goodness to change the generic name of *Cickla storeria* to *Centrachus* both in my description and on the plate. [all species of *Cickla* are now regarded as synonyms. See Trautman 1957: 35.]

"With my limited opportunities I find it very difficult to decide with certainty upon the minute characters which distinguish many of Cuvier's genera of fishes especially as I have only McMustin's abridged translation to reports. . . . If it would be of any value to the collections of your Society [Boston Society of Natural History] I would with pleasure add to it specimens of most of our Ohio Fishes."

After receiving two letters from Storer, Kirtland wrote from Cincinnati, where he was teaching in the Ohio Medical College, on 14 January 1839.

"The freedom with which you pointed out the discrepancy between the figure and description of the Gray Bass was received with the utmost spirit of kindness and thankfulness on my part and I shall always feel grateful to you for any corrections of errors of that character. The subject of Ichthyology is new to me and when I turned my attention to it last year it seemed to be surrounded with so many obstacles that I despaired of ever covering them. Your aid has enabled me to progress so far with our Western Fishes that I have been enabled to form a catalogue of 73 species which I have reported to our Legislature in my Annual Geological Report. [see Kirtland 1838]

"I shall soon be able to forward you our Geological Report and when I do it, will take the liberty of asking a great variety of questions in regard to many of the species and hope you will favor me with your views in regard to them. I hope and trust you will use the utmost frankness and freedom in pointing out to me every error. I know you would do it if we were personally acquainted and I assure you that under existing circumstances you need not feel the least restraint.

"My catalogue is not reported with the expectation that it is now totally correct and is considered *only as the first step* towards the development of certain branches of the natural history of our state. It was drawn forth prematurely by the course pursued by our Legislature

and whether I shall pursue the subject any further under their control is doubtful and depends upon the course they take with the Survey and with our Medical College during their present session. If they make a favorable move I shall continue in my present station; if they do not I probably shall resign both my professorship and my situation in the Geological Board. In the latter case I shall continue my investigations and should be glad to make your Journal the medium for laying before the public the results of my labors. A few weeks will determine my course. [The Geological Survey was not continued at that time.]

"The Dog-fish of Lake Erie proves to be the *Amia calva* of Linnaeus My brother informs me that he met with it on the upper waters of the Mississippi above Prairie du Chein. . . . I have lately found a few specimens of a neat-looking sucker (*Catostomus*) in this market that is not described by Lesueur or Rafinesque and a lamprey (*Petromyson*) that is new to me. . . .

"If you think the other portions of my former communication sufficiently correct to be worthy of publication you can lay them before the public, but as it was among my first attempts at drawing I do not feel very anxious to see them in that form. Having attended to some instruction in drawing during the winter I shall be able in future to make them more correct and in better style."

After his return to the Cleveland area, Kirtland sent a letter, a manuscript, and descriptions and drawings of 15 Ohio fishes for Storer's appraisal on 20 September 1839.

"You will receive accompanying this letter, drawings and descriptions of 15 species of fishes inhabiting our Western Waters, together with a communication to the Boston Society of Natural History. I have committed them to your charge with the expectation that after you have examined them you will make such disposition of them as you think they merit. If you think they are executed sufficiently well and the object is of importance enough, you will please to lay them before the Society, after correcting the errors. If on the other hand my attempt falls so far short of what the subject requires you will without hesitation retain them in your own hands and never let them go before the Society. I rely solely on your candor and judgment and shall be fully satisfied whatever decision you make. [Kirtland's letter was read at the meeting of the Boston Society of Natural History on 15 October 1839, a report of which was published in the *Proceedings* without the illustrations (Kirtland 1839). Later, the manuscript with some of the illustrations was published as the first issue in his series (Kirtland 1840).]

"I have been lately occupied during the summer in changing my location from Poland [suburb of Youngstown] to this city [suburb of Cleveland] which I hope will in future relieve me from many of my interruptions and enable me to pursue my studies with greater facility."

Pleased with the appearance of his work, Kirtland wrote at once on 18 November 1839 from Cincinnati.

"The engraver executed those first drawings in a manner far exceeding my expectations for I was apprehensive that they would appear like Rafinesque in the *Journal of Natural Sciences* (Philadelphia) [*Journal of the Academy of Natural Sciences of Philadelphia*].

"Since my last letter I have succeeded in obtaining a specimen of the *Perca chrysopa* [now *Roccus chrysops* (Rafinesque), White Bass] from the Ohio [River]. It is specifically identical with that of Lake Erie but of a darker color. It must however be placed under the genus *Labrax* rather than *Perca* as it has 2 spines on the operculum. It is toothed on the tongue and palate. One of the spines is rather obtuse and not very evident.

"The other fish I shall describe under the name *Chatoessus ellipticus* [now *Dorosoma cepedianum* (Le Sueur), Eastern Gizzardshad]. Rafinesque, I believe, had this fish in view when he wrote his description, but he must have been extremely careless."

Following receipt of a copy of Storer's *Report on the Ichthyology and Herpetology of Massachusetts* (1839), Kirtland wrote to the author complimenting him on his success and disparaging himself on his own efforts. Kirtland was too modest and self-effacing even though his work on fishes had just begun. He wrote 16 December 1839:

"It affords me much satisfaction to see the ichthyology of your section of the country so fully and amply elucidated, but the perusal of your publication has served to strengthen me in the conviction that I have prematurely engaged in an attempt to illustrate that department of natural science so far as the state of Ohio is concerned. In every movement I make in investigating the subject I find myself surrounded with perplexities and obscurity without the means of extricating myself. I have neither a friend who knows one fish from another nor a book on the subject to which I can apply with the exception of Rafinesque's and Lesueur's publications. A still more insurmountable obstacle thwarts my advancement in the undertaking. My efforts at drawing are sufficiently puerile, but my attempts at describing are so stiff, awkward, and in such bad style that my productions will probably do your journal more injury than good."

Upon completing his term of teaching at the Ohio College of Medicine in Cincinnati, Kirtland sent the following letter 28 February 1840. Notice his interest in parasitic worms and land snails as well as fishes.

"I have this day packed up drawings and descriptions of the following [27] species of fishes. These I have figured and described since I came to this city [Cincinnati] on the 20th of Oct. . . .

"On opening 3 specimens of the *Polyodon folius* [now *P. spathula* (Walbaum), Paddlefish] I found a number of tapeworms in the stomach of two of them. These parasites I have preserved and they will be forwarded by Mr. [J. G.] Anthony to the Boston Society of Natural History. I would observe that I have also discovered them in the stomach of dogs and suckers as well [as] of the Human family. . . .

"If your conchologists were as well acquainted with the peculiar habits of the *Helix striatella* of Anthony [now *Discus cronkhitei* (Anthony)] as I am they would not consider it the young of the *H. perspectiva* [now *Discus patulus* (Deshayes)]. I recognized it as a distinct species in 1834. I sent specimens to Wm. Hyden of Philadelphia who compared it with the *perspectiva*.

"My attention will be paid during the summer to the smaller species of fish among which I expect to find some that are new and no one except Rafinesque has ever known any two of them apart. At least such is the fact among our best naturalists."

Continuing his disagreement with some of Rafinesque's descriptions of new species, Kirtland wrote from Cleveland 11 May 1840:

"The *Noturus flavus* [Stonecat Madtom] and *Pimelodus nebulosis* [now "presumably *Pilodictis olivaris*," Flathead Catfish, according to Trautman 1957: 42] of Rafinesque I believe complete all the species of this family that exist in our western waters, with perhaps one exception. I once saw a small species that I have not met with of late years. The other species of Rafinesque are I believe mere varieties.

"I shall feel myself under great obligation to you to make every alteration and every addition to my descriptions that you may think proper. Independent of my want of sufficient knowledge of the subject I am harried and perplexed with the multiplicity of my pursuits and since my removal to this place am taxed with the additional burden of formality and the routine of fashion incidental to a city-life—a burden not very pleasant to one who is attempting to be a practical naturalist. . . .

"I perhaps was misled in regard to the anatomical structure of the *Lepidosteus* by a dissection made by one of my students and without

sufficient examination mistook the natatory bladder, which is cellular, for a lung. 'The smaller species in the tributaries of the lake [Lake Erie] have not yet been examined I believe by any one and they may be essentially different from those in the lake itself.'

In the same vein, he wrote 3 August from Cleveland:

"During a late excursion into the County of Columbiana I found the *Pimephales promilas* abundant in the upper branches of the Little Beaver [River] and I have no doubt from further examination that the male is Rafinesque's *Hypentelium macropterum*. It differs in form from the female—is longer and has the habit of gathering around the beds of the female in great numbers early in June. The inventive genius of that author [Rafinesque] could easily form from it a new species."

And again on 28 December 1840, from Cincinnati:

"From repeated examination I am led to the conclusion that the *Accipenser maculosus*, *nudus*, *ohioensis*, *macrostomus*, and *serotinus* are only varieties of one species arising from age and sex."

Kirtland was keen in detecting similarities as well as differences among organisms he studied. His conclusion concerning *Accipenser* [sturgeon] was correct. Trautman (1957) recognized only one species in Ohio (see Moulton 1957 for Kirtland's illustrations of *Accipenser*). On 25 January 1841 Kirtland wrote further on that problem.

"During the last season I have met with all these species [*Accipenser maculosus*, *rubicundus*, *serotinus*, *ohioensis*, and *macrostomus* described by Lesueur and Rafinesque], both in the lake and the Ohio River and with others again which could with equal propriety be described as new species. By close observation it will, however, be found that they all run one into another and the distinctions are owing to *locality*, *age*, and *sex*. . . ."

"On further examination I suspect the large minnow a drawing of which I sent, under the name of *Rutilus playgrus* of Rafinesque is a new species [later named *Rutilus storeria* Kirtland.] It inhabits the deep waters of Lake Erie exclusively. I have since taken what I deem to be the true *R. playgrus* [now *Notropis cornutus chrysocephalus* (Rafinesque), Central Common Shiner] and will soon send a drawing of it. . . ."

Kirtland's poor health occasionally interrupted his scientific studies, but he nevertheless accomplished a prodigious amount of scientific work in addition to his medical practice and teaching. Notice in the letter to follow his belief in "marsh miasmata" as a cause of his sickness before the role of

mosquitoes in transmitting disease was discovered. Kirtland wrote 20 February and again 17 June 1841:

"My health is too bad to allow me to write or study much at this time, as I am suffering severely from a persistent Hemicrania—the effect of my last year's exposures to marsh miasmata in the Cuyahoga swamps."

"Either long exposure to miasma about the swamps and rivers or to the fumes of arsenic in putting up birds last autumn induced a daily attack of neuralgic pains in different parts of the fifth branch of nerves resembling Tic-Doloreaux. . . . Under these circumstances I have thrown aside my books and studies and since my return from Cincinnati have rode, every pleasant day, to my farm 5 miles from Cleveland [Rockport, now Lakewood]. That exercise with the use of strong beer and Graham bread has improved my health so much that I am now beginning to turn my attention again to my favorite pursuits."

Six months later, still having health problems, he announced his plans for the future in a letter to Storer on Christmas Day, 1841:

"At the close of the present term (1st of March) I shall resign my station in this Institution [Ohio Medical College] and return to my farm five miles west of Cleveland [in Rockport]. Though my health is apparently restored this winter, I still find my constitution giving way under my duties here and my infirmities warn me to change my life and habits. I may perhaps be induced to accept a professorship in the Willoughby Medical School 20 miles east of Cleveland where the duties would be much easier and I should not be separated for any considerable time from my family and business.

"I hope to be able to devote my time mostly to natural science and horticulture. My farm is one of the surest and best for fruit in the U.S. The immense volume of water in the lake moderates the temperature of the air in its vicinity during the winter and the silicious and calcaruous combination of soil reflects heat to a high degree during summer and autumn so that we neither suffer from frosts in spring or fall nor from the want of high temperature to mature the fruits of summer and autumn."

By 1 June 1842 he was settled on his farm at Rockport, with a new house under construction. As he wrote to Storer from Cleveland:

"Before I left Cincinnati I resigned my station in the Medical College of Ohio and accepted an appointment in the Willoughby Institution 20 miles east of Cleveland. I have also returned to my farm 5 miles west of this place. I am now busily engaged in superintending the building of my house etc. preparatory to a permanent residence in the country."

His last letter to Storer, written 29 May 1845, concerned his final installment on the fishes of Lake Erie, the Ohio River, and their tributaries, and his hopes for the future.

"After a long delay from causes beyond my control, I have at length completed the drawings and descriptions of our Western Fishes which I shall forward to you in a few days. . . .

"After three years hard struggling we have at length got our Cleveland Medical College in a safe condition. The building will be so far completed as to be used for lecturing the ensuing winter. One story is to devote to cabinets of natural science [Museum of the Cleveland Academy of Natural Sciences]. After this I hope my time will be occupied in arranging and studying those cabinets and not with medical politics as it has been for three years."

The balance of his life was given largely to natural history and horticulture, especially developing new varieties of fruits, particularly cherries. He did not, however, publish much more beyond brief notices on the fishes of Ohio.

A Kirtland-Baird Collection of Ohio Fishes (1853)

Between 8-12 August 1853 Spencer Fullerton Baird joined Dr. Kirtland at Poland, Ohio, to make a collection of fishes from Yellow Creek and an adjacent section of the Mahoning River. The Mahoning is a tributary of the Big Beaver which empties into the Ohio River at Beaver, Pennsylvania. There is no indication where the specimens were sent. Some or all may have been sent to the Smithsonian Institution where Baird was the Assistant Secretary and was on the staff of the museum.

Spencer Fullerton Baird (1823-87) was a native of Reading, Pennsylvania. Five years after graduating from Dickinson College in 1840, he returned as professor of natural history. In 1850 he was appointed Assistant Secretary of the Smithsonian Institution. He donated his personal collection of zoological specimens, including a great many fishes, which became the nucleus for the collection of the U.S. National Museum (now National Museum of Natural History), and he prepared the Smithsonian "Instructions to Collectors," which was widely circulated among American naturalists. Since 1847 Baird had served as U.S. Commissioner of Fish and Fisheries.

Some or all of the collection of 1853 may have been sent to the Museum of Comparative Zoology at Harvard University or to the Boston Society of Natural History. Kirtland was known to send specimens to those



Fig. 3. Spencer Fullerton Baird (1823-1887), U.S. Commissioner of Fish and Fisheries, who, along with Storer, aided Kirtland in his studies on Ohio fishes. Smithsonian Institution Photo No. 46,853.

institutions. Nothing was published on the collection as a unit, but records may have been used in connection with other studies. In any case, Baird's notes on the collection came to the attention of Frederic W. Putnam.

Frederic Ward Putnam (1839-1915) was a student under Louis Agassiz and was in charge of the fish collection at the Museum of Comparative Zoology. Until he completed his studies at Harvard, he served as part-time curator of ichthyology for the Boston Society of Natural History. He became curator of the museum of the Essex Institute in 1864, and the first director and curator of vertebrates for the Peabody Academy of Science (now the Peabody Museum of Salem) when it was founded by George Peabody in 1866. All of these museums were in touch with Baird at the National Museum, and Putnam made periodic trips to Washington to study the fish collection. At one place or another, Putnam acquired Baird's notes on the Kirtland-Baird collection of 1853 and made a copy (in his own handwriting) which is now in the archives of the Peabody Museum of Salem. To this copy Putnam added detailed notes on his study of the Etheostomids (darters), his own specialty of ichthyology (Dexter 1966, 1970). The original identification of the fish collection, however, was probably made by Baird.

The current scientific names and the preferred English names are taken from Trautman, *The Fishes of Ohio* (1957). Of the 41 species collected, only two remain with the same name unchanged, and three others had only a minor change in the name. Eleven species are not listed by Trautman, so probably were incorrectly identified.

List of 41 species collected by Kirtland-Baird (1853)

Those marked with an asterisk were originally described by Kirtland.

Catostomus nigricans (*Hypertelium nigricans*) Hog Sucker

C. communis? (*C. commersoni commersoni*) Common White Sucker

C. dugesnii? (*Moxostoma* spp.) Red Horse

Exoglorum dubium (*Campostoma anomalum anomalum*) Ohio Stoneroller Minnow

Rhinichthys astronotus-ordis (*R. atratulus meleagris*) Western Blacknose Dace

R. erythropterus? (probably sp. above)

Leuciscus playgrus (*Notropis cornutus*) Common Shiner

L. americanus (*Notemigonus crysoleucas*) Goldenshiner

L. atromaculatus (*Semotilus atromaculatus atromaculatus*) Northern Creek Chub

- **L. biguttatus* (*Hybopsis biguttata*) Hornyhead Chub
- L. cf. blennoides* of Carlisle (not listed by Trautman)
- L. longirostus* Kirt. (*Clinostomus elongatus*) Redside Dace
- L. erythrogaster* (*Chrosomus erythrogaster*) Southern Redbelly Dace
- **L. elongatus* (*Clinostomus elongatus*) Redside Dace
- L. kentuckiensis* (*Hybopsis micropogon*, or *H. biguttata*) River Chub
- Alburnus rubellus*? (not listed by Trautman)
- Alburnus* sp. (possibly *Notropis atherinoides atherinoides*) Common Emerald Shiner
- Pimephales promelas*? (*P. promelas promelas*) Northern Fathead Minnow
- P. elongatus* (not listed by Trautman)
- **Melanura limi* Mud fish. (*Umbra limi*) Central Mudminnow
- Athermoid* new gen. (not listed by Trautman)
- Pomotis vulgaris* (probably *Lepomis gibbosus*, or *L. megalotis*) Pumpkin-seed Sunfish
- P. nitidus* (*Lepomis megalotis*) Longear Sunfish
- Pomotis* n. sp. Sunfish
- Esox fasciatus*? (not listed by Trautman)
- Centrarchus hexacanthus* (*Pomoxis annularis*) White Crappie
- C. aeneus* (*Ambloplites rupestris rupestris*) Northern Rockbass
- Grystes fasciatus*? (not listed by Trautman)
- Pimelodus limosus* (*Pilodictus olivaris*) Flathead Catfish
- P. flavus*? (not listed by Trautman)
- Naturus flavus*, Stonecat Madtom
- **Gasterosteus inconstans* (*Eucalia inconstans*) Brook Stickleback
- Cottus bairdii*, Redfin Sculpin
- **Etheostoma variata* (*E. variatum*) Variegated Darter
- **E. maculata* (*E. maculatum*) Spotted Darter
- E. marginata* (not listed by Trautman)
- E. tessellata* (not listed by Trautman)
- E. pellucida* (*Ammocrypta pellucida*) Eastern Sand Darter
- E. notata* (not listed by Trautman)
- E. (elyria)* (not listed by Trautman)
- E. caprodes* (*Percina caprodes caprodes*) Ohio Logperch Darter
- Four other species were listed as "caught on a preceding visit."
- **Leuciscus dissimilis* (*Hybopsis dissimilis dissimilis*) Ohio Spotted Chub
- Etheostoma blennioidi* (*E. blennioides*) Greenside Darter
- Etheostoma* sp., Darter
- Rhinichthys* sp., Dace
- The following 16 species were recorded as having been reported to Kirtland and Baird from the same area, but were not collected by them.
- Anguilla* sp., Eel

Ammocoetes, Larval Lamprey
Petromyzon sp., Lamprey
Lucioperca americana (*Stizostedion* spp.) Walleye
L. canadensis (*Stizostedion canadense*) Sauger
Lepidosteus sp., Gar
Catostomus anisurus (*Moxostoma anisurum*) Silver Redhorse
Catostomus sp., Sucker
Leuciscus sp. Shiner
Labrax multilineatus (*Roccus chrysops*) White Bass
Corvina oscula (*Aplodinotus grunniens*) Freshwater Drum
Hyodon tergisus (*Hiodon tergisus*) Mooneye
Chatoessus sp. (probably *Dorosoma cepedianum*) Eastern Gizzardshad
Acipenser sp., Sturgeon
Polyodon folium (*P. spathula*) Paddlefish
Pimelodus funatus (not listed by Trautman) Catfish

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